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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,890	02/16/2001	Robert M. Moore JR.	SU-7073-L	5058

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EDGAR SPIELMAN  
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EXAMINER
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PRYOR, ALTON NATHANIEL

ART UNIT	PAPER NUMBER
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1616

MAIL DATE	DELIVERY MODE
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05/21/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

09/785,890

Applicant(s)

MOORE ET AL.

Examiner

Alton N. Pryor

Art Unit

1616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1-5 is/are allowed.
- 6) ☒ Claim(s) 6-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

The prosecution of the application is reopened and rejections are set forth below.

### **DETAILED ACTION**

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 6-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Goodenough (USPN 3558503; 1/26/71 – Exhibit 1003).

The instant claims 6-9 are directed to a “stabilized, bromine-based biocide” and to a “method for control of bacteria, algae and mollusks in a water system comprising introducing in the system the stabilized, bromine-based biocide”. The instant specification does not expressly define the term “stabilized, bromine-based biocide” as recited in the claims. However, the instant specification uses the term “concentrated stabilized liquid biocide formulation,” “aqueous biocidal composition,” or “concentrated stabilized biocidal composition” to refer to a liquid or aqueous solution containing the biocidal bromine compound.” See page 8, lines 8-17; claim 1. Moreover, in discussing the prior art, the specification identifies molecular bromine chloride as a “single-feed, bromine-based biocide.” See page 1, lines 21-22. Consistent with the manner in which terms are used in the instant specification, the term “stabilized, bromine-based biocide” recited in Moore’s claims to mean the bromine compound resulting from the recited steps, as opposed to the resulting aqueous formulation or solution containing the

bromine compound. The claimed “stabilized, bromine-based biocide” is not directed to a composition. Moore’s claims 6-9 are “product-by-process” claims and their patentability depends on the claimed product as opposed to steps by which the product is made.

With respect to the recitation “wherein the pH of the solution is from about 13.0 to about 13.7” in instant claim 8, the specification makes it clear to one skilled in the relevant art that “solution” refers to the “overbased alkali metal sulfamate solution.” See specification at 9, lines 20-21.

Having analyzed instant claims, we turn to the evidence. Goodenough discloses aqueous bromine solutions with bromine values of about 0.01 to about 100,000 ppmw useful for bleaching processes, treatment of swimming pool water, and disinfection. See column 1, lines 13-61. Specifically, Goodenough teaches solutions made by a process comprising providing an aqueous solution of bromine and contacting therewith a bromine value stabilizer (e.g., sulfamic acid) and an effective amount of magnesium hydroxide sufficient to achieve a final pH in the system ranging from about 8 to about 10. See column 2, lines 1-40. In addition, Goodenough teaches that the bromide solutions to be treated by the disclosed process may further contain chlorides in the form of brine solutions such as sodium chloride or calcium chloride. See column 2, lines 16-22. Goodenough discloses that the molar ratio of bromine to nitrogen is from about 2 to about 0.5, which would have indicated to one of ordinary skill in the art that the atomic ratio of nitrogen to active bromine (N:Br) is from about 0.5 to about 2. See column 1 lines 66-69. Goodenough teaches a Solution A “prepared by admixing 6.05 grams of sulfamic acid with about 500 grams of water, followed by addition of about

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3.65 grams of magnesium hydroxide and about 5 grams of bromine.” See example 3, column 4 lines 66-69. Goodenough states the solution was placed in a brown ultraviolet light-screening bottle for about 4 days, thus indicating to one of ordinary skill in the art (based on the exothermic nature of the reaction disclosed in the Goodenough) that cooling occurred. Hence, Goodenough’s reaction is exothermic.

Given the close similarities between the preparation processes and starting materials stated in instant claim 6 and the prior art, it is reasonable to conclude that the claimed “stabilized, bromine-based biocide” and the stable prior art final bromine compound as described in Goodenough are essentially the same.

The evidence of record supports a prima facie case of unpatentability against instant claims 6-10.

Instant invention alleges that the use of bromine chloride in lieu of bromine results in a nonobvious difference. This contention lacks merit for a number of reasons. First, instant independent claim 6 does not recite any pH values. Second, instant claims do not call for a composition of compounds or mixture of N-halo compounds but instead are directed to any “stabilized, bromine-based biocide” that is formed by the recited process steps. Third, nowhere does the instant specification point to any experimental evidence establishing any difference, let alone a patentable difference, between a biocide within the scope of instant claim 6 and Goodenough’s final bromine compound where sodium chloride or calcium chloride is used as a starting material along with bromine. Note it is inherent that the combination of bromine with sodium chloride or

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calcium chloride in the Goodenough patent would result in the BrCl compound employed in instant invention.

Assuming that some difference results by practicing the process recited in instant product claims, instant specification has not shown that this difference in the preparation process results in a product of claim 6 and 7 being different from Goodenough's product. One having ordinary skill in the art would have been led to exchange Goodenough's bromine with bromine chloride with the expectation that these reactants would be interchangeable as bromine sources in the production of bromine-based biocides and that bromide chloride would provide advantages over bromine.

With respect to instant claims 8, which states that the solution's pH is from about 13.0 to about 13.7. Note that the pH of the aqueous alkali sulfamate solution in Goodenough's Example 3 would be about 13.9. (Exhibit 1001). Goodenough's pH of around 13.9 makes obvious the instantly claimed pH of about 13.7 in instant claim 8. It would have been obvious to one having ordinary skill in the art at the time of the filing of instant to provide an initial solution as set forth in instantly claimed subject matter having a pH between 13 and 14, which encompasses the claimed range, in order to maintain the storage stability of the final product.

The subject matter of the instant claim 9 reciting an active bromine content of "at least about 100,00 ppm and an atomic ratio of nitrogen to active bromine of greater than 0.93 would have been obvious to a person having ordinary skill in the art because the prior art ranges and instantly claimed ranges overlap.

Now regarding claim 10, one having ordinary skill in the art would have found the method of instant claim 10 obvious because Goodenough teaches the use of the composition in water treatment. See column 1 lines 13-61.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodenough (USPN 3558503; 1/26/71 – Exhibit 1003) in view of Declaration of B. Gary McKinnie (Exhibit 1001), The Second Declaration of B. Gary McKinnie, 2/14/05 (Exhibit 1073) Mills et al., Bromine Chloride: an Alternative to Bromine, Ind. Eng. Chem. Prod. Res. Develop., vol. 12, No. 3, 1973, pp.161160-165 (Exhibit 2014), Declaration of Dr. Jack Mills, 12/6/04 (Exhibit 2021), Expert Declaration of Dr. Shunong Yang, 12/6/04 (Exhibit 2022), and Expert Declaration of John A. Wojtowicz, 12/7/04 (Exhibit 2023).

The instant claims 6-9 are directed to a “stabilized, bromine-based biocide” and to a “method for control of bacteria, algae and mollusks in a water system comprising introducing in the system the stabilized, bromine-based biocide”. The instant specification does not expressly define the term “stabilized, bromine-based biocide” as recited in the claims. However, the instant specification uses the term “concentrated stabilized liquid biocide formulation,” “aqueous biocidal composition,” or “concentrated stabilized biocidal composition” to refer to a liquid or aqueous solution containing the

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biocidal bromine compound.” See page 8, lines 8-17; claim 1). Moreover, in discussing the prior art, the specification identifies molecular bromine chloride as a “single-feed, bromine-based biocide.” See page 1, lines 21-22. Consistent with the manner in which terms are used in the instant specification, the term “stabilized, bromine-based biocide” recited in Moore’s claims to mean the bromine compound resulting from the recited steps, as opposed to the resulting aqueous formulation or solution containing the bromine compound. The claimed “stabilized, bromine-based biocide” is not directed to a composition. Moore’s claims 6-9 are “product-by-process” claims and their patentability depends on the claimed product as opposed to steps by which the product is made. With respect to the recitation “wherein the pH of the solution is from about 13.0 to about 13.7” in instant claim 8, the specification makes it clear to one skilled in the relevant art that “solution” refers to the “overbased alkali metal sulfamate solution.” See specification at 9, lines 20-21.

Having construed instant claims, we turn to the evidence. Goodenough discloses aqueous bromine solutions with bromine values of about 0.01 to about 100,000 ppmw useful for bleaching processes, treatment of swimming pool water, and disinfection. See column 1, lines 13-61. Specifically, Goodenough teaches solutions made by a process comprising providing an aqueous solution of bromine and contacting therewith a bromine value stabilizer (e.g., sulfamic acid) and an effective amount of magnesium hydroxide sufficient to achieve a final pH in the system ranging from about 8 to about 10. See column 2, lines 1-40. In addition, Goodenough teaches that the bromide solutions to be treated by the disclosed process may further contain chlorides in the



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form of brine solutions such as sodium chloride or calcium chloride. See column 2, lines 16-22. According to Dr. McKinnie, the reaction the reaction in the Goodenough would be exothermic. See exhibit 1001. Goodenough discloses that the molar ratio of bromine to nitrogen is from about 2 to about 0.5, which would have indicated to one of ordinary skill in the art that the atomic ratio of nitrogen to active bromine (N:Br) is from about 0.5 to about 2. See column 1 lines 66-69. Goodenough teaches a Solution A "prepared by admixing 6.05 grams of sulfamic acid with about 500 grams of water, followed by addition of about 3.65 grams of magnesium hydroxide and about 5 grams of bromine." See example 3, column 4 lines 66-69. Goodenough states the solution was placed in a brown ultraviolet light-screening bottle for about 4 days, thus indicating to one of ordinary skill in the art (based on the exothermic nature of the reaction disclosed in the Goodenough) that cooling occurred.

Given the close similarities between the preparation processes and starting materials stated in instant claim 6 and the prior art, it is reasonable to conclude that the claimed "stabilized, bromine-based biocide" and the stable prior art final bromine compound as described in Goodenough are essentially the same.

The evidence of record supports a prima facie case of unpatentability against instant claims 6-10.

Moore alleges that the use of bromine chloride in lieu of bromine results in a nonobvious difference. In support of this contention, Moore relies on the Second Declaration of B. Gary McKinnie.

This contention lacks merit for a number of reasons. First, instant independent claim 6 does not recite any pH values. Second, instant claims do not call for a composition of compounds or mixture of N-halo compounds but instead are directed to any "stabilized, bromine-based biocide" that is formed by the recited process steps. Third, nowhere does the instant specification point to any experimental evidence establishing any difference, let alone a patentable difference, between a biocide within the scope of instant claim 6 and Goodenough's final bromine compound where sodium chloride or calcium chloride is used as a starting material along with bromine.

Assuming that some difference results by practicing the process recited in instant product claims, instant specification has not shown that this difference in the preparation process results in a product of claim 6 and 7 different from Goodenough's product. According to Jack F. Mills & John A. Schneider, "Bromine Chloride: an Alternative to Bromine," 12 Ind. Eng. Chem. Prod. Res. Develop. 160-165, no. 3 (1973) (Exhibit 2014, "Mills paper"), bromine chloride and bromine are interchangeable brominating agents and the former offers, inter alia, important cost and ecological advantages. (Mills paper at 160. One having ordinary skill in the art would have been led to exchange Goodenough's bromine with bromine chloride with the expectation that these reactants would be interchangeable as bromine sources in the production of bromine-based biocides and that bromide chloride would provide advantages over bromine. This conclusion is in agreement with: (1) Dr. Mills's declaration, which based on the teaching of the Mills paper, pronounces that the interchange of bromine chloride for bromine in instant invention (claims) would have been obvious (Exhibit 2021) as well as (2) Dr.

Yang's testimony, stating that "substitution of bromine chloride for bromine is obvious (Exhibit 2022).

With respect to instant claims 8, which states that the solution's pH is from about 13.0 to about 13.7. Dr. McKinnie, has calculated that the pH of the aqueous alkali sulfamate solution in Goodenough's Example 3 would be about 13.9. (Exhibit 1001). Goodenough's pH of around 13.9 makes obvious the instantly claimed pH of about 13.7 in instant claim 8. Moreover, Drs. Yang and Wojtowicz both favor that it would have been obvious to one having ordinary skill in the art at the time of the filing of instant to provide an initial solution as set forth in instantly claimed subject matter having a pH between 13 and 14, which encompasses the claimed range, in order to maintain the storage stability of the final product. Exhibits 2022 and 2023.

The subject matter of the instant claim 9 reciting an active bromine content of "at least about 100,00 ppm and an atomic ratio of nitrogen to active bromine of greater than 0.93 would have been obvious to a person having ordinary skill in the art because the prior art ranges and instantly claimed ranges overlap.

Now regarding claim 10, one having ordinary skill in the art would have found the method of instant claim 10 obvious because Goodenough teaches the use of the composition in water treatment. See column 1 lines 13-61.

#### ***Allowable Subject Matter***

The prior art does not teach or suggest producing a concentrated stabilized biocidal composition which comprises adding BrCl to an overbased, aqueous alkali

metal sulfamate solution, wherein the pH of the aqueous alkali metal sulfamate solution results in the biocidal composition having a pH of at least 7.

***Telephonic Inquiry***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alton N. Pryor whose telephone number is 571-272-0621. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Alton Pryor  
Primary Examiner  
AU 1616